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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/809,036	03/16/2001	Mark Allmen	37112-167615	5594

26694 7590 03/20/2006

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EXAMINER	
SENFI, BEHROOZ M	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 03/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/809,036	ALLMEN ET AL.	
	Examiner	Art Unit	
	Behrooz Senfi	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/29/2005*.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *8/2/2005*.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/23/2005 has been entered.

Response to Arguments

2. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 – 10, 11, 16 – 21, 25 – 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crinon et al, US 2002/0191846 in view of Yang US 6,490,319.

Regarding claims 1 and 18, Crinon '846 teaches, a method and apparatus (figs. 5A – 5B, 6) for encoding a video sequence (fig. 1, 18), said video sequence (fig. 1, 18)

comprising a background composite (paragraph 0005 and 0009, i.e. background mosaic) and foreground regions (paragraphs 0005, 0009, i.e. foreground object), encoding the video sequence (paragraph 0016, i.e. MPEG-4, figs. 5A: 32), and a computer to encode the video sequence (figs. 5A – 5B shows an automatic segmentation coder with MPEG-4 coding. MPEG-4 also allows software implemented coding, thus would have involved a computer to carry out the coding).

Crinon '846 is silent in regards to encoding the video sequence based on balancing bits per pixel between background composite with bits per pixel for foreground regions to achieve similar quality between the two during video sequence reconstruction as claimed. However, Crinon '846 discloses MPEG-4 coding (para 0016), and the desire to make background and foreground regions homogeneous (see fig. 6, also para 0063-0065). Furthermore, Yang '319 discloses that typically, visual quality of the foreground object is achieved at the expense of the background quality, and balancing the quality differential between the regions for real-time performance is difficult when the content and data rate of a video image change (col. 1, line 24-31). Hence, Yang '319 suggests a bit rate controlling technique that utilizes adaptive quantization levels to adjust the quality of regions of a video image by bit balancing between the background and foreground regions, and achieving real-time performance (col. 1, line 56 – col. 2, line 7, col. 3, line 33-42, col. 5, line 23-28, see also fig. 4 and its respective disclosure).

Therefore, taking the combined teaching of Crinon '846 and Yang '319 as a whole, it would have been obvious to one skilled in the art at the time of the invention

was made to adopt the technique of bit balancing between the background and foreground regions as taught in Yang and apply the same to balance the bits between background composite and foreground regions as claimed to achieve real-time bit rate control that results in no quality contrast differential between the background composite and foreground regions.

Regarding claim 2, the limitations claimed have been analyzed and rejected with respect to claim 1 above.

Regarding claim 3, the claimed shape/texture read on MPEG-4 coding disclosed in Crinon (see para 0016, also para 0038-0039, also shape information is associated with video object plane VOP).

Regarding claims 4 and 7, which further recite wherein the bits per pixel for background and bits per pixel for foreground are related by a balancing factor, see (Yang, col. 5, lines 13 – 22).

Regarding claims 5 – 6, which further recite balancing factor comprises a correction factor (claim 5), and balancing factor comprises a quality factor (claim 6), the claimed limitations read on quantization rate controller and bit balancing which have been analyzed and rejected with respect to claim 1 above.

Regarding claim 8, Crinon '846 is silent in regards to actual number of bits.

However, Crinon '846 discloses MPEG-4 coding (para 0016), and the desire to make background and foreground regions homogeneous (see fig. 6, also para 0063-0065). Furthermore, Yang '319 discloses that typically, visual quality of the foreground object is achieved at the expense of the background quality, and balancing the quality

differential between the regions for real-time performance is difficult when the content and data rate of a video image change (col. 1, line 24-31). Hence, Yang '319 suggests a bit rate controlling technique, which both regions of the video image are quantize to the same level, this quantization level is referred to maximum quantization level for both foreground and background provides an actual bit rate for the video frame, which is close to the target bit rate (col. 1, line 56 – col. 2, line 7, col. 3, line 33 - 42).

Therefore, taking the combined teaching of Crinon '846 and Yang '319 as a whole, it would have been obvious to one skilled in the art at the time of the invention was made to adopt the technique of bit balancing (quantization control) between the background and foreground regions as taught in Yang and apply the same to balance the bits between background composite and foreground regions as claimed to achieve real-time bit rate control that results in no quality contrast differential between the background composite and foreground regions.

Regarding claims 9 and 20, iterative processing/encoding as claimed is shown in Crinon (figs. 5A-5B, figs. 6 – 7).

Regarding claim 10, Crinon '846 is silent in regards to "determining an estimated background quantization step based on an estimated number of bits for the compressed background composite and the number of bits for the compressed background composite".

However, such features are well known and used in the prior art of the record, as evidenced by Yang (i.e. col. 3, lines 33 – 42) wherein, "an estimated background quantization step" reads on (Qmax), and "estimated number of bits for the compressed

background" reads on (target bit rate, R), and "number of bits for the compressed background composite" reads on (actual bit rate).

Regarding claim 11, the combined teaching of Crinon '846 and Yang '319 as analyzed and rejected with respect to claims 1 and 18 above also teaches determining a starting foreground quantization step for the foreground regions based on a background quantization step for the background composite and a desired bit rate (see Yang, col. 3, lines 33 – 42).

Regarding claims 16 – 17, which recite a computer system and a computer-readable medium, these limitations have been analyzed and rejected with respect to claims 1 and 18 above.

Regarding claims 19 and 27, the limitations claimed have been analyzed and rejected with respect to claims 1, 8 and 11 above.

Regarding claim 21, the limitations claimed have been analyzed and rejected with respect to claim 10 above.

Regarding claims 25 – 26, the limitations claimed have been analyzed and rejected with respect to claims 16 – 17 above.

5. Claims 12 – 15, 22 – 24 and 28 - 29, are rejected under 35 U.S.C. 103(a) as being unpatentable over Crinon et al, US 2002/0191846 in view of Yang US 6,490,319 further in view of Ryoo (US 5,990,957).

Regarding claims 15 and 24, combination of Crinon '846 and Yang '319 teaches, encoding the video sequence based on balancing bits per pixel as analyzed and

rejected with respect to claim 1 above. Crinon further suggest block skipping (page 3, paragraph 0040), which can be used for controlling bit rate during encoding. However, the combined teaching of Crinon and Yang lacks details of block skipping technique.

Ryoo '957 (i.e. col. 7, lines 20 – 34) teaches block skipping and block variance to estimate/control the bit amount/rate of each video object. Bit balancing has been obviated by the combined teaching of Crinon and Yang as applied to claim 1 above.

Therefore, taking the combined teaching of Crinon '846 and Yang '319 and Ryoo '957 as a whole, it would have been obvious to one skilled in the art at the time of the invention was made to control the bit amount of each video object by determining the picture/block variance and frame skipping as taught by Ryoo (col. 7, lines 20 – 34) for the benefit of efficiently allocating appropriate bit amount to each video object (col. 2, lines 6 – 11, Ryoo).

Regarding claim 12, the limitations claimed have been analyzed and rejected with respect to claim 15 above.

Regarding claims 13 – 14, combination of Crinon '846 and Yang '319 and Ryoo '957 teaches, frame dropping, as discussed with respect to claim 12, and temporal sub-sampling and bit-budget, claim 13 (col. 11, lines 45 – 55 of Ryoo, and also col. 5, lines 13 – 20 of Yang), and actual number of bits, claim 14 (Yang, col. 3, lines 35 – 40).

Regarding claims 22 - 23, the limitations claimed have been analyzed and rejected with respect to claims 12 – 13 above.

Regarding claims 28 – 29, the limitations claimed have been analyzed and rejected with respect to claims 22 and 24 above.

Contact

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Behrooz Senfi** whose telephone number is **(571) 272-7339.**

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Mehrdad Dastouri** can be reached on **(571) 272-7418.**

Hand-delivered responses should be brought to Randolph Building, 401 Dulany Street, Alexandria, Va. 22314.

Any inquiry of a general nature or relative to the status of the application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is **(571) 272-6000,**

Or faxed to:

(571) 273-8300

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

B.M.S.

3/10/2006

VU LE
PRIMARY EXAMINER